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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/511,034

10/13/2004

Masashi Otsuki

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EXAMINER

KALAFUT, STEPHEN J

ART UNIT

PAPER NUMBER

1795

MAIL DATE

DELIVERY MODE

01/18/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/511,034

Applicant(s)

OTSUKI ET AL.

Examiner

Stephen J. Kalafut

Art Unit

1795

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 5, 6, 18 and 19 is/are allowed.
- 6) ☒ Claim(s) 1-4, 7-17 and 20-26 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date (2 dates).
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____.

Claims 1-4, 7-17 and 20-26 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claims 1 and 14, the term "characterized by dispersing" is unclear because it implies that the battery performs some kind of dispersing step. In reality, the alkaline earth oxides are dispersed within the MnO₂ or composite oxide. The claims also do not recite which battery component includes the alkaline earth oxides. Claims 2-4, 7-13, 15-17 and 20-26 depend from claims 1 or 14, and would be likewise indefinite.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2 and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by Eda *et al.* (US 4,336,315 or JP 63-24,301), both cited by applicants.

Eda *et al.* disclose a non-aqueous battery that includes a cathode in which an oxide of magnesium, calcium or barium is mixed with MnO₂ (column 3, lines 44-47, in the U.S. Patent). The battery includes an aprotic organic solvent such as propylene carbonate and a support salt such as lithium perchlorate (column 1, lines 52-56, in the U.S. Patent). Because these are the same materials as presently claimed, the battery of Eda *et al.* would be primary to the same extent as the present battery.

Regarding the Japanese document, see the English abstract, specifically the section entitled "CONSTITUTION", which also mentions propylene carbonate, lithium perchlorate, magnesium oxide, calcium oxide and barium oxide.

Claims 1 and 2 are rejected under 35 U.S.C. 102(b) as being anticipated by Umeda *et al.* (JP 58-218,755), cited by applicants.

Umeda *et al.* disclose a cell with an organic electrolyte and a cathode composed mainly of MnO₂, which also includes calcium oxide. See the English abstract, specifically the section entitled "CONSTITUTION". Because these are the same materials as presently claimed, the battery of Umeda *et al.* would be primary to the same extent as the present battery.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 8-11 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eda *et al.* (either document above) in view of Tsutiya *et al.* (US 6,475,679).

These claims differ from Eda *et al.* by reciting a phosphazene derivative, or isomer thereof, within the electrolyte. Tsutiya *et al.* disclose a non-aqueous cell with an electrolyte that includes the phosphazene derivative (R¹O)₃P=NH-SO₃-R¹, where each R¹ group may be different (column 3, lines 34-43). This would correspond to the present formula (I), where Y¹, Y² and Y³

are the bivalent element oxygen, and to the present formula (VII), where Y^7 and Y^8 are the bivalent element oxygen. It is noted that claims 9-11 recite more specific versions of formula (II) in claim 8, but are still open to instead including a phosphazene derivative of formula (I). Tsutiya *et al.* teach the use of their phosphazene derivatives in a cell with a cathode such as MnO_2 (column 7, line 32). The phosphazene derivative reduces the danger of ignition and inflammation of a non-aqueous electrolyte (column 3, lines 21-33). For this reason, it would be obvious to add to the organic electrolyte of Eda *et al.* the phosphazene derivative of Tsutiya *et al.*

Claim 12 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims. The prior art cited either herein or by applicant does not disclose a battery in which the electrolyte includes a phosphazene derivative that is solid at 25 °C and is represented by formula (V).

Claims 14-17 and 20-26 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action. The prior art does not disclose a battery in which the cathode includes an oxide of magnesium, calcium or barium dispersed between particles of $LiCoO_2$, $LiNiO_2$ or $LiMn_2O_4$.

Claims 5, 6, 18 and 19 are allowed. The present methods of making the positive electrodes, including steps of adding an aqueous solution of alkaline earth metal hydroxide to MnO_2 , $LiCoO_2$, $LiNiO_2$ or $LiMn_2O_4$ while cooling them to below 15 °C; raising the temperature

to 45-55 °C at 1-10 °C per minute; further raising the temperature to 65-85 °C at 10-15 °C per minute; raising the temperature to 290-310 °C to convert the hydroxide into oxide to prepare a powder; and shaping the powder to produce an electrode.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Otsuki *et al.* (US 6,955,867 or US 7,067,219) disclose phosphazene derivatives for use in non-aqueous electrolytes.

The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen J. Kalafut whose telephone number is 571-272-1286. The examiner can normally be reached on Mon-Fri 8:00 am-4:30 pm.

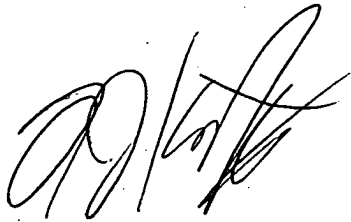
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

sjk



STEPHEN KALAFUT
PRIMARY EXAMINER
GROUP 1700